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10/697,183	10/30/2003	Gal Shachor	IL920030037US1	8155
7590 09/04/2007 Stephen C. Kaufman Intellectual Property Law Dept. IBM Corporation P. O. Box 218 Yorktown Heights, NY 10598			EXAMINER CAMPOS, YAIMA	
			ART UNIT 2185	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

mn

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/697,183		SHACHOR, GAL	
	<b>Examiner</b>		<b>Art Unit</b>	
	Yaima Campos		2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS; WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 June 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11, 13-15, 17-23, 25 and 33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-15, 17-23, 25 and 33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. As per the instant Application having Application number 10/697,183, the examiner acknowledges the applicant's submission of the amendment dated June 18, 2007. At this point, claims 1-8, 13-14, 22, 25 and 33 have been amended, and claims 12, 16, 24, 26-32 and 34 have been cancelled. There are 23 claims pending in the application; there are 5 independent claims and 18 dependent claims, all of which are ready for examination by the examiner. Claims 1-11, 13-15, 17-23, 25 and 33 are pending.

### REJECTIONS BASED ON PRIOR ART

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1-7, 11, 13-15, 17-19, 21-23, 25 and 33** are rejected under 35 U.S.C. § 103 as being unpatentable over Cooke, Jr. et al. (US 6,574,629) in view of "Digital Imaging and Communications in Medicine" Supplement 10, Basic Worklist Management, 1996 (hereinafter, "Supplement 10").

4. As per **claims 1 and 25**, Cooke discloses "a method of managing a storage," as it is taught that [**"The invention described herein can be used to manage folder of studies;" wherein "archive station 4 comprises a workstation 40 having a memory device 41" and**

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**that memory device comprises “long-term DICOM storage for studies provided from imaging modalities” (Figure 1 and Column 8, lines 39-47)],**

“a program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps of managing a storage,” and “a computer program product comprising a computer useable medium having computer readable program code embodied therein of managing a storage” [With respect to these limitations, Cooke discloses that “workstation 10 includes memory 21, which comprises a computer readable medium such as one or more computer hard disks” and that “PACS software modules comprise computer-executable code that defines process steps for effecting the various PACS functions of each component/extension” (Figures 1,3 and Column 7, lines 42-45 and 54-58)

“wherein the storage includes a faster access part and a slower access part” [With respect to this limitation, Cooke discloses that “workstation 10 includes memory 21, which comprises a computer-readable medium such as one or more computer hard disks” as disclosing a slower storage part in memory, and also explains that “a portion of memory 21 may comprise a cache 23 for the workstation” as disclosing a faster storage part in memory (Figure 3 and Column 7, lines 42-46). Cooke also teaches having “an archive station which has access to a long-term memory for storing image data, and a reviewing station which has a display for displaying images based on received image data” (Column 2, lines 21-25)] comprising: obtaining information from a worklist regarding at least one task scheduled to be performed by at least one modality;” [With respect to this limitation, Cooke discloses that “the worklist comprises the study, or group of studies, that the user selects from the main

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study list” (Column 11, lines 53-54), that “the present invention includes the ability to route relevant prior studies to a reviewing station in contemplation of a scheduled event such as patient examination or the like” (Column 18, lines 55-57) and that a “worklist select button selects studies that match default worklist criteria” from a “main study list” (Column 24, lines 42-48) “the PACS pre-fetches images in response to a scheduled event... the network gateway receives information concerning the scheduled event, receives the details from the remote source, and retrieves images from a memory on the PACS based on the details and one or more predetermined pre-fetching rules” (Col. 3, lines 14-37). Applicant should note that although Cooke does not explicitly use the term “worklist;” the purpose of the claimed worklist is to schedule “schedule at least one modality to perform at least one task” which is clearly disclosed by Cooke as a scheduled event, such as “a patient examination or the like” (Col. 18, lines 55-67)]

determining, based on said information and at least one predetermined rule, at least one type of data likely to be accessed in connection with said at least one task; and “prefetching at least some data of said type from the slower access part to the faster access part of said storage” [With respect to this limitation, Cooke discloses that “predetermined PACS pre-fetching rules stored in memory on the network gateway take over to retrieve relevant prior studies from a memory (e.g., the archives) on the PACS” and that “once this is done, the prior studies are copied into the archive station’s cache (or alternatively, the network gateway’s cache) and routed to the appropriate stations automatically” (Column 19, lines 4-15) as ensuring fast memory contains data likely to be accessed in the near future. Cooke also teaches that “the network gateway can request information concerning the nature of the scheduled

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event (e.g., an exam, consultation, surgery, etc.), the time and date of the scheduled event, and the body part pertaining to the scheduled event, among other things” (Columns 18-19, lines 65-67 and 1-2)] and also discloses [“network gateway 6 is in communication with reviewing stations 7 and imaging modalities 42 via the DICOM network, and is in communication with remote sources, such as the hospital’s RIS (*radiology information system*) 44” (Figure 1 and Column 10, lines 12-16) and also explains that “extensions exist which provide connectivity to a hospital’s information system (HIS)” (Column 12, lines 52-53) wherein “the present invention includes the ability to route relevant prior studies to a reviewing station in contemplation of a scheduled event, such as a patient examination or the like. This process is called pre-fetching and is effected by code executing on the network gateway” (Co. 18, lines 55-67); therefore, providing relevant data which is deemed likely to be accessed by a scheduled event as it pre-fetches to prepare for an upcoming event which will access the data].

Cooke does not disclose expressly the details of obtaining scheduling information from “a Digital Image Communication in Medicine (DICOM) modality worklist.”

Supplement 10 discloses obtaining scheduling information from “a Digital Image Communication in Medicine (DICOM) modality worklist” which schedules at least one modality to perform at least one task as [“**This Supplement to the DICOM Standard specifies a DICOM Basic Worklist Management Service Class... A worklist is the structure to present information related to a particular set of tasks. It specifies particular details for each task. The information may support the selection of the task to be performed first and may support the performance of that task. One example is the worklist used to present**

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**information about scheduled imaging procedures at an imaging modality and to the operator of that modality” (Page V, lines 4-27)].**

Cooke, Jr. et al. (US 6,574,629) and “Digital Imaging and Communications in Medicine” Supplement 10, Basic Worklist Management, 1996 (hereinafter, “Supplement 10”) are analogous art because they are from the same field of endeavor of processing and storage of medical images.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the method of managing storage wherein data is pre-fetched in response to a scheduled event as described by Cooke and specifically obtain this information from a Digital Image Communication in Medicine (DICOM) modality worklist to retrieve information about an scheduled imaging procedure at an imaging modality as taught by Supplement 10. Furthermore, one of ordinary skill in the art would have been motivated to replace the PACS broker to facilitate the communication of information from the RIS and instead use the DICOM communication protocol which is well known in the art at the time of the invention.

The motivation for doing so would have been because Supplement 10 discloses that a Digital Imaging Communication in Medicine DICOM modality worklist facilitates scheduling of tasks and explains that [**“the worklist has to be queried by the Application Entity (AE) associated to the equipment on which, or by which, the tasks included in the worklist have to be performed” (Page V, lines 4-27)]**]. Furthermore, Cooke discloses that by effecting pre-fetching in view of scheduled events [**“the invention further reduces the amount of time to review images” (Col. 3, lines 29-31)]**]. Therefore; one of ordinary skill in the art would find it obvious to use examine DICOM worklist which provides information of scheduled events as

taught by Supplement 10 and pre-fetch information which is deemed likely to be accessed by scheduled event as taught by Cooke.

Therefore, it would have been obvious to combine “Digital Imaging and Communications in Medicine” Supplement 10, Basic Worklist Management, 1996 (hereinafter, “Supplement 10”) with Cooke, Jr. et al. (US 6,574,629) for the benefit of creating a memory management method to obtain the invention as specified in claims 1 and 25.

5. As per **claim 2**, the combination of Cooke and Supplement 10 discloses “the method of claim 1,” [See rejection to claim 1 above] “wherein obtaining said information includes: examining a task description of at least one task, said task description included in said DICOM modality worklist” [With respect to this limitation, Cooke discloses that “worklist select button 184 selects studies that match default worklist criteria” (Figure 12 and Column 42-43). Cooke further teaches, “study list contains folders with studies, images and image-related information. Each line in the study list contains information about one study or patient” (Column 26, lines 63-65), that “worklist comprises the study, or group of studies, that the user selects from the main study list” (Column 11, lines 53-54) and that a “worklist section of toolbar” includes “patient and study identifiers” (Column 28, line 65) and explains “the present invention includes the ability to route relevant prior studies to a reviewing station in contemplation of a scheduled event, such as a patient examination or the like. This process is called pre-fetching and is effected by code executing on the network gateway” (Co. 18, lines 55-67). Supplement 10 discloses “This Supplement to the DICOM Standard specifies a DICOM Basic Worklist Management Service Class... A worklist is the structure to present information related to a particular set of tasks. It specifies particular



details for each task. The information may support the selection of the task to be performed first and may support the performance of that task. One example is the worklist used to present information about scheduled imaging procedures at an imaging modality and to the operator of that modality” (Page V, lines 4-27)].

6. As per claim 3, the combination of Cooke and Supplement 10 discloses “the method of claim 1,” [See rejection to claim 1 above] “wherein obtaining said information includes: examining information about said at least one modality, said information about said at least one modality included in said DICOM modality worklist” [With respect to this limitation, Cooke discloses that users may “select to list studies in the main study list based on the imaging modality used to generate images in the studies” (Column 25, lines 45-50) and explains “the present invention includes the ability to route relevant prior studies to a reviewing station in contemplation of a scheduled event, such as a patient examination or the like. This process is called pre-fetching and is effected by code executing on the network gateway” (Co. 18, lines 55-67). Supplement 10 discloses “This Supplement to the DICOM Standard specifies a DICOM Basic Worklist Management Service Class... A worklist is the structure to present information related to a particular set of tasks. It specifies particular details for each task. The information may support the selection of the task to be performed first and may support the performance of that task. One example is the worklist used to present information about scheduled imaging procedures at an imaging modality and to the operator of that modality” (Page V, lines 4-27)].

7. As per claim 4, the combination of Cooke and Supplement 10 discloses “the method of claim 1,” [See rejection to claim 1 above] “wherein the predetermined rule is tailored to at least

one specific information consumer” [With respect to this limitation, Cooke discloses that “pre-fetching rules may be set/modified by the user via relevant prior rules link 112” and that “initially, the pre-fetching rules are used to determine which prior studies on the PACS should be retrieved” (Figure 5 and Column 19, lines 6-11) as portraying “the user” as an information consumer].

8. As per claim 5, the combination of Cooke and Supplement 10 discloses “the method of claim 1,” [See rejection to claim 1 above] “wherein prefetching includes: transferring data from the slower access part of the storage to the faster access part of the storage” [Cooke discloses this limitation as it is explained that “predetermined PACS pre-fetching rules stored in memory on the network gateway take over to retrieve relevant prior studies from a memory (e.g., the archives) on the PACS” and that “once this is done, the prior studies are copied into the archive station’s cache (or alternatively, the network gateway’s cache) and routed to the appropriate stations automatically” (Column 19, lines 4-15) as ensuring fast memory contains data likely to be accessed in the near future. Cooke also teaches that “the network gateway can request information concerning the nature of the scheduled event (e.g., an exam, consultation, surgery, etc.), the time and date of the scheduled event, and the body part pertaining to the scheduled even, among other things” (Columns 18-19, lines 65-67 and 1-2)].

9. As per claim 6, the combination of Cooke and Supplement 10 discloses “the method of claim 1,” [See rejection to claim 1 above] “wherein prefetching includes: copying data from the slower access part of the storage to the faster access part of the storage” [With respect to this limitation, Cooke discloses that “the prior studies are copied into the archive station’s

cache (or alternatively, the network gateway's cache) and routed to the appropriate stations automatically" (Column 19, lines 4-15) from archive memory; as copying data from a slower memory to a faster memory].

10. As per claim 7, the combination of Cooke and Supplement 10 discloses "the method of claim 1," [See rejection to claim 1 above] "wherein said at least one type of data comprises reference data, and wherein prefetching includes ensuring that reference data which is deemed likely to be accessed is available in the faster access part of the storage" [With respect to this limitation, Cooke discloses that "predetermined PACS pre-fetching rules stored in memory on the network gateway take over to retrieve relevant prior studies from a memory (e.g., the archives) on the PACS" and that "once this is done, the prior studies are copied into the archive station's cache (or alternatively, the network gateway's cache) and routed to the appropriate stations automatically" (Column 19, lines 4-15) as ensuring fast memory contains data likely to be accessed in the near future. Cooke also teaches that "the network gateway can request information concerning the nature of the scheduled event (e.g., an exam, consultation, surgery, etc.), the time and date of the scheduled event, and the body part pertaining to the scheduled even, among other things" (Columns 18-19, lines 65-67 and 1-2). Applicant should note "the present invention includes the ability to route relevant prior studies to a reviewing station in contemplation of a scheduled event, such as a patient examination or the like. This process is called pre-fetching, and is effected by code executing on the network gateway" (Column 18, lines 55-67); therefore, providing relevant data which is likely to be accessed by a scheduled event as it is prefetched to prepare for an upcoming event which will access this data].

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11. As per claim 11, the combination of Cooke and Supplement 10 discloses “the method of claim 1,” [See rejection to claim 1 above] “wherein modality is an image acquisition machine” [Cooke discloses this limitation as the “invention described herein is preferably implemented via a DICOM 3.0 compliant, high-speed, networked computer system designed for digital storage, routing, retrieval, transmission, display and printing of medical images” (Columns 5-6, lines 66-67 and 1-4). Cooke also teaches that “the network gateway is the work-flow manager” and that “the network gateway comprises a workstation that supports at least six, preferably more, simultaneous associations with DICOM-compliant imaging modalities. This modalities include, but are not limited to, X-ray, CT, MRI, NM an US modalities” (Columns 9-10, lines 66-67 and 3-8)].

12. As per claims 13-14 and 19, Cooke discloses “a system for storage management,” as it is taught that [“The invention described herein can be used to manage folder of studies;” wherein “archive station 4 comprises a workstation 40 having a memory device 41” and that memory device comprises “long-term DICOM storage for studies provided from imaging modalities” (Figure 1 and Column 8, lines 39-47)] “comprising: at least one modality configured to perform at least one task in accordance with a scheduling by at least one worklist;” [With respect to this limitation, Cooke discloses that “the network gateway is the work-flow manager” and that it “receives images (as image data) from various non-core components including imaging modalities, confirms the validity of the received images, and routes them appropriately” (Columns 9-10, lines 66-67 and 1-3). Cooke also discloses a memory device comprising “long-term DICOM storage for studies provided from imaging modalities” (Figure 1 and Column 8, lines 39-47). Applicant should note that although Cooke does not

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explicitly use the term “worklist;” the purpose of the claimed worklist is to schedule “schedule at least one modality to perform at least one task” which is clearly disclosed by Cooke as a scheduled event, such as “a patient examination or the like” (Col. 18, lines 55-67)] “a storage configured to store data, including a faster access part and a slower access part;” [With respect to this limitation, Cooke discloses that “workstation 10 includes memory 21, which comprises a computer-readable medium such as one or more computer hard disks” as disclosing a slower storage part in memory, and also explains that “a portion of memory 21 may comprise a cache 23 for the workstation” as disclosing a faster storage part in memory (Figure 3 and Column 7, lines 42-46). Cooke also teaches having “an archive station which has access to a long-term memory for storing image data, and a reviewing station which has a display for displaying images based on received image data” (Column 2, lines 21-25)] “and a prefetcher configured to obtain information from said at least one worklist regarding said at least one task, determine based on said information and at least one predetermined rule, at least one type of data likely to be accessed in connection with said at least one task, and prefetch at least some data of said type from said slower access part to said faster access part of said storage” [Cooke discloses this limitation as “predetermined PACS pre-fetching rules stored in memory on the network gateway take over to retrieve relevant prior studies from a memory (e.g., the archives) on the PACS” and that “once this is done, the prior studies are copied into the archive station’s cache (or alternatively, the network gateway’s cache) and routed to the appropriate stations automatically” (Column 19, lines 4-15) as ensuring fast memory contains data likely to be accessed in the near future. Cooke also teaches that “the network gateway can request information concerning the nature of

**the scheduled event (e.g., an exam, consultation, surgery, etc.), the time and date of the scheduled event, and the body part pertaining to the scheduled even, among other things” (Columns 18-19, lines 65-67 and 1-2)].**

Cooke does not disclose expressly the details of “a Digital Image Communication in Medicine (DICOM) modality worklist” to schedule at least one modality to perform one task.

Supplement 10 discloses “examining Digital Image Communication in Medicine (DICOM) modality worklist” which schedules at least one modality to perform at least one task as [**“This Supplement to the DICOM Standard specifies a DICOM Basic Worklist Management Service Class... A worklist is the structure to present information related to a particular set of tasks. It specifies particular details for each task. The information may support the selection of the task to be performed first and may support the performance of that task. One example is the worklist used to present information about scheduled imaging procedures at an imaging modality and to the operator of that modality” (Page V, lines 4-27)]**].

Cooke, Jr. et al. (US 6,574,629) and “Digital Imaging and Communications in Medicine” Supplement 10, Basic Worklist Management, 1996 (hereinafter, “Supplement 10”) are analogous art because they are from the same field of endeavor of processing and storage of medical images.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the method of managing storage wherein data is pre-fetched in response to a scheduled event as described by Cooke and specifically examine a Digital Image Communication in Medicine (DICOM) modality worklist to retrieve information about an

scheduled imaging procedure at an imaging modality as taught by Supplement 10. Furthermore, one of ordinary skill in the art would have been motivated to replace the PACS broker to facilitate the communication of information from the RIS and instead use the DICOM communication protocol which is well known in the art at the time of the invention.

The motivation for doing so would have been because Supplement 10 discloses that a Digital Imaging Communication in Medicine DICOM modality worklist facilitates scheduling of tasks and explains that [**“the worklist has to be queried by the Application Entity (AE) associated to the equipment on which, or by which, the tasks included in the worklist have to be performed” (Page V, lines 4-27)**]. Furthermore, Cooke discloses that by effecting pre-fetching in view of scheduled events [**“the invention further reduces the amount of time to review images” (Col. 3, lines 29-31)**]. Therefore, one of ordinary skill in the art would find it obvious to use examine DICOM worklist which provides information of scheduled events as taught by Supplement 10 and pre-fetch information which is deemed likely to be accessed by scheduled event as taught by Cooke.

Therefore, it would have been obvious to combine “Digital Imaging and Communications in Medicine” Supplement 10, Basic Worklist Management, 1996 (hereinafter, “Supplement 10”) with Cooke, Jr. et al. (US 6,574,629) for the benefit of creating a memory management method to obtain the invention as specified in claims 13, 14 and 19.

13. As per **claim 15**, the combination of Cooke and Supplement 10 discloses “the system of claim 13,” [See rejection to claim 13 above] “further comprising: at least one information consumer configured to access data stored in said storage” as [**“all query, transmit, retrieve, store and print actions initiated by a client” go through the database server (Column 11,**

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lines 6-8) and also discloses that “reviewing stations are workstations that may be used to retrieve and to view medical images handled by the PACS, as well as information relating thereto” (Column 11, lines 28-30)].

14. As per claim 17, the combination of Cooke and Supplement 10 discloses “the system of claim 13,” [See rejection to claim 13 above] wherein “said HIS or RIS and said prefetcher are configured to communicate in accordance with the Digital Image Communications in Medicine (DICOM) standard” as [With respect to this limitation, Cooke discloses that “memory device 41” comprises “central and secure near and long-term DICOM storage for studies provided from imaging modalities” (Column 8, lines 38-41) and that “the scanned images are transmitted to the PACS using DICOM 3.0 protocol” (Column 15, lines 15-16)].

15. As per claim 18, the combination of Cooke and Supplement 10 discloses “the system of claim 13,” [See rejection to claim 13 above] “wherein said prefetcher is also configured to transfer or copy from said slower access part of said storage to said faster access part of said storage at least some data which is available only in said slower access part and which is deemed likely to be accessed in connection to said at least one task” [Cooke discloses this limitation as “predetermined PACS pre-fetching rules stored in memory on the network gateway take over to retrieve relevant prior studies from a memory (e.g., the archives) on the PACS” and that “once this is done, the prior studies are copied into the archive station’s cache (or alternatively, the network gateway’s cache) and routed to the appropriate stations automatically” (Column 19, lines 4-15) as ensuring fast memory contains data likely to be accessed in the near future].



16. As per **claims 21 and 33**, Cooke discloses “a system for prefetching,” as it is taught that **[“the present invention includes the ability to route relevant prior studies to a reviewing station in contemplation of a scheduled event, such as a patient examination or the like” and that “this process is called pre-fetching” (Column 18, lines 55-58)]** “comprising: a worklist examiner configured to examine a worklist and determine at least one type of data likely to be accessed, said at least one type of data being related to a task to be performed by a modality scheduled by said worklist;” determining, based on said information and at least one predetermined rule, at least one type of data likely to be accessed in connection with said at least one task; and prefetching at least some data of said type from the slower access part to the faster access part of said storage [With respect to this limitation, Cooke discloses that “pre-fetching involves RIS gateway 46 receiving information concerning a scheduled event from RIS 44, and then transmitting that information to the PACS, in particular to network gateway 6. The network gateway then queries the RIS, via the RIS gateway, requesting details concerning the scheduled event” (Figure 1 and Column 18, lines 59-65) as pre-fetching data likely to be needed in the near future. Cooke further discloses that “display button 125 enables a user to display one or more selected studies in the main study list” (Column 20, lines 63-65) and that “the reviewing stations also perform automatic worklist generation and updates as relevant studies arrive” wherein “a user may enter a query asking the PACS to locate a study or group of studies based on input criteria” (Column 11, lines 41-54). Applicant should note that although Cooke does not explicitly use the term “worklist;” the purpose of the claimed worklist is to schedule “schedule at least one modality to perform at least one task” which is clearly disclosed by Cooke as a scheduled event, such as

**“a patient examination or the like” (Col. 18, lines 55-67)] “a cross referencer configured to compare said at least one type of data with data stored for an entity identified for said task;” [An equivalent limitation is taught by Cooke as “once the network gateway receives the requested information form the RIS, predetermined PACS pre-fetching rules stored in memory on the network gateway take over to retrieve relevant prior studies from memory (e.g., the archive)” (Column 19, lines 3-6) as only those studies pertaining to pre-fetching rules will be retrieved and displayed to a user] “and a retriever configured to transfer or copy data stored for said identified entity which is of at least one of said types and is available only in a slower access part of a storage to a faster access part of said storage” [This limitation is taught by Cooke as it is taught that “network gateway” copies prior studies “into the archive station’s cache (or alternatively, the network gateway’s cache)” and these prior studies are then “routed to the appropriate stations automatically” (Column 19, lines 9-15)].**

Cooke does not disclose expressly the details of “examining a Digital Image Communication in Medicine (DICOM) modality worklist.”

Supplement 10 discloses obtaining information from a “Digital Image Communication in Medicine (DICOM) modality worklist” which schedules at least one modality to perform at least one task as **“This Supplement to the DICOM Standard specifies a DICOM Basic Worklist Management Service Class... A worklist is the structure to present information related to a particular set of tasks. It specifies particular details for each task. The information may support the selection of the task to be performed first and may support the performance of that task. One example is the worklist used to present information about scheduled**

**imaging procedures at an imaging modality and to the operator of that modality” (Page V, lines 4-27)].**

Cooke, Jr. et al. (US 6,574,629) and “Digital Imaging and Communications in Medicine” Supplement 10, Basic Worklist Management, 1996 (hereinafter, “Supplement 10”) are analogous art because they are from the same field of endeavor of processing and storage of medical images.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the method of managing storage wherein data is pre-fetched in response to a scheduled event as described by Cooke and specifically examine a Digital Image Communication in Medicine (DICOM) modality worklist to retrieve information about an scheduled imaging procedure at an imaging modality as taught by Supplement 10. Furthermore, one of ordinary skill in the art would have been motivated to replace the PACS broker to facilitate the communication of information from the RIS and instead use the DICOM communication protocol which is well known in the art at the time of the invention.

The motivation for doing so would have been because Supplement 10 discloses that a Digital Imaging Communication in Medicine DICOM modality worklist facilitates scheduling of tasks and explains that [**“the worklist has to be queried by the Application Entity (AE) associated to the equipment on which, or by which, the tasks included in the worklist have to be performed” (Page V, lines 4-27)]**]. Furthermore, Cooke discloses that by effecting pre-fetching in view of scheduled events [**“the invention further reduces the amount of time to review images” (Col. 3, lines 29-31)]**]. Therefore; one of ordinary skill in the art would find it obvious to use examine DICOM worklist which provides information of scheduled events as

taught by Supplement 10 and pre-fetch information which is deemed likely to be accessed by scheduled event as taught by Cooke.

Therefore, it would have been obvious to combine “Digital Imaging and Communications in Medicine” Supplement 10, Basic Worklist Management, 1996 (hereinafter, “Supplement 10”) with Cooke, Jr. et al. (US 6,574,629) for the benefit of creating a memory management method to obtain the invention as specified in claim 21 and 33.

17. As per **claims 22 and 23**, Cooke discloses “the system of claim 21,” [See rejection to claim 21 above] “further comprising: a rules storage configured to store at least one rule which allow said worklist examiner to determine said at least one type of data likely to be accessed” as [**“pre-fetching rules stored in memory on the network gateway”** (Column 19, lines 4-5) and further explains that **“the pre-fetching rules may be set and/or modified by the user”** (Column 19, lines 23-24) wherein these rules allow **“the user to selectively configure pre-fetching of images relating to particular specialties”** (Column 19, Table 4; this table also shows all the aspects that may be used to modify pre-fetching rules) and explains **“the present invention includes the ability to route relevant prior studies to a reviewing station in contemplation of a scheduled event, such as a patient examination or the like. This process is called pre-fetching, and is effected by code executing on the network gateway”** (Column 18, lines 55-67); therefore, providing relevant data which is likely to be accessed by a scheduled event as it is prefetched to prepare for an upcoming event which will access **this data**] “further comprising: an internal database configured to save data from said worklist about said at least one task” as [**“edited images and the like are stored to database files on the archive station. These database files are preferably stored in a hard disk or the like on**

workstation 40, and comprise a collection of all information relating to studies and parameters” wherein “information stored in the database is demographic information associated with each patient and study” (Columns 8-9, lines 66-67 and 1-4)].

18. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooke, Jr. et al. (US 6,574,629) in view of of “Digital Imaging and Communications in Medicine” Supplement 10, Basic Worklist Management, 1996 (hereinafter, “Supplement 10”) as applied to claims 1-7, 11-15, 17-19, 21-23, 25, 27 and 33-34 above, and further in view of Sechrest et al. (US 6,910,106).

19. As per claim 8, the combination of Cooke and Supplement 10 discloses “the method of claim 1” [See rejection to claim 1 above] wherein [“the present invention includes the ability to route relevant prior studies to a reviewing station in contemplation of a scheduled event, such as a patient examination or the like. This process is called pre-fetching, and is effected by code executing on the network gateway” (Column 18, lines 55-67); therefore, providing relevant data which is likely to be accessed by a scheduled event as it is prefetched to prepare for an upcoming event which will access this data] but fails to disclose expressly that wherein said at least one type of data comprises historical data nor “ensuring includes ensuring that historical data is deemed likely to be accessed.”

Sechrest discloses a memory management system wherein said at least one type of data comprises historical data wherein prefetching includes “ensuring includes ensuring that historical data is deemed likely to be accessed.” Sechrest discloses this limitation as it is taught that [“the present invention is directed towards an improved memory management architecture comprising systems, methods and mechanisms that provide a proactive, resilient and self-

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**tuning memory management system” (Column 2, lines 39-42) by “loading and maintaining in memory data that is likely to be needed, before the data is actually needed” (Column 2, lines 45-46) and further explains that “the present invention comprise various mechanisms directed towards historical memory usage monitoring, memory usage analysis, refreshing memory with highly-valued pages, I/O prefetching efficiency, and aggressive disk management” (Column 2, lines 60-65)].**

Cooke, Jr. et al. (US 6,574,629), of “Digital Imaging and Communications in Medicine” Supplement 10, Basic Worklist Management, 1996 (hereinafter, “Supplement 10”) and Sechrest et al. (US 6,910,106) are analogous art because they are from the same field of endeavor of computer memory management.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to make the memory management system as disclosed by the combination of Cooke and Supplement, and further take usage history into consideration when deciding what data is likely to be accessed in the near future, as disclosed by Sechrest.

The motivation for doing so would have been because Sechrest teaches that [**“by having the memory filled with appropriate data before those pages are needed, the memory management system substantially reduces or eliminates on-demand disk transfer operations, and thus reduces or eliminates I/O bottlenecks in many significant consumer scenarios” (Column 2, lines 56-60), that “a page’s utility can be determined by its I/O transfer expense, along with the historical tracing of its usage” (Column 10, lines 31-33) and also specifies that “the present invention provides advantages via value-based selective or whole memory loading, where value is determined at least in part on pre-observation,**

**whether by tracking its usage history, and/or by training simulation” (Column 16, lines 34-36)].**

Therefore, it would have been obvious to combine Sechrest et al. (US 6,910,106) with Cooke, Jr. et al. (US 6,574,629) and “Digital Imaging and Communications in Medicine” Supplement 10, Basic Worklist Management, 1996 (hereinafter, “Supplement 10”) for the benefit of creating a memory management system to obtain the invention as specified in claim 8.

20. As per **claims 9 and 10**, the combination of Cooke, Supplement 10 and Sechrest discloses a method as specified in claims 1, 7, and 8 [See rejection to claims 1, 7, and 8 above]. Cooke further discloses having “data about a specific object on which said task is to be performed” wherein “said object is a body part of a patient” as it is explained that [**“the present invention includes the ability to route relevant prior studies to a reviewing station in contemplation of a scheduled event, such as a patient examination or the like” (Column 18, lines 55-57) and it is further disclosed that “the network gateway can request information concerning the nature of the scheduled event (e.g., an exam, consultation, surgery, etc.), the time and date of the scheduled event, and the body part pertaining to the scheduled event, among other things” (Columns 18-19, lines 65-67 and 1-2)]].**

21. **Claim 20** is rejected under 35 U.S.C. § 103 as being unpatentable over Cooke, Jr. et al. (US 6,574,629) in view of “Digital Imaging and Communications in Medicine” Supplement 10, Basic Worklist Management, 1996 (hereinafter, “Supplement 10”) as applied to claims 1-7, 11-15, 17-19, 21-23, 25, 27 and 33-34 above, and further in view of Bocionek (US 2002/0091765).

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22. As per claim 20, the combination of Cooke and Supplement 10 does not specifically disclose the details of a hospital information system or radiology information system configured to generated said at least one DICOM modality worklist.

However, Examiner asserts that the use of a hospital information system or radiology information system configured to generated said at least one DICOM modality worklist is well known in the art at the time of the invention [as evidenced by Bocionek; “in addition of these *administrative activities*, the RIS often also acts as workflow driver in radiology in order, for example, to send request data in the form of a DICOM worklist entry to a modality such as a CT, MR or X-ray device at which the examination is to take place” (Page 1, Paragraph 0009)].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use of a hospital information system or radiology information system configured to generated said at least one DICOM modality worklist as taught by Bocionek since Examiner asserts that the use of a hospital information system or radiology information system configured to generated said at least one DICOM modality worklist is well known in the art at the time of the invention.

#### ACKNOWLEDGMENT OF ISSUES RAISED BY THE APPLICANT

##### Response to Amendment

23. Applicant's arguments filed on June 18, 2007 have been considered but are they are not persuasive.



24. As required by M.P.E.P. § 707.07(f), a response to these arguments appears below.

**ARGUMENTS CONCERNING PRIOR ART REJECTIONS**

25. Claims must be given the broadest reasonable interpretation during examination and limitations appearing in the specification but not recited in the claim are not read into the claim (See M.P.E.P. 2111 [R-1]).

**FIRST POINT OF ARGUMENT**

26. Regarding Applicant's remark that the combination of Cooke and Supplement 10 does not disclose "obtaining information from a Digital Image Communication in Medicine (DICOM) modality worklist regarding at least one task scheduled to be performed by at least one modality," "determining, based on said information and at least one predetermined rule, at least one type of data likely to be accessed in connection with said at least one task" and/or "prefetching at least some data of said type from the slower access part to the faster access part of said storage;" the Examiner respectfully disagrees. [See rejection to claims 1, 12, 21, 25 and 33 above] wherein all the claimed limitations are identified.

**SECOND POINT OF ARGUMENT**

27. Regarding Applicant's remark that since Cooke does not teach obtaining information from a DICOM modality worklist, Cooke cannot teach the claimed features of "determining, based on said information and at least one predetermined rule, at least one type of data likely to be accessed" and/or "prefetching at least some data of said type" and that Cooke teaches away from prefetching based on information obtained from a DICOM modality worklist; the Examiner respectfully disagrees and would like to submit that the claims stand rejected under 35

U.S.C. 103 obviousness-type rejection. Nothing in Cooke rules out the possibility of using a DICOM worklist as taught in Supplement 10 for the purposes of scheduling tasks. [Cooke clearly discloses prefetching data likely to be accessed based on scheduling information for at least one modality to perform one task, such as a patient examination or the like. Cooke does not expressly disclose obtaining the scheduling information from a DICOM modality worklist; however, Supplement 10 cures this deficiency as it teaches using a DICOM worklist to schedule tasks. One of ordinary skill in the art would have been motivated to replace/substitute the PACS broker to facilitate the communication of information from the RIS and instead use the DICOM communication protocol which is well known in the art at the time of the invention because the two comprise communication protocols used for transfer of medical images]. The simple substitution of one element for another to obtain predictable results and applying a known technique to a known device ready for improvement (such as applying a DICOM modality worklist as used in Supplement 10 in the system that prefetches data likely to be accessed in view of a scheduled event as taught by Cooke for purposes of scheduling tasks) would be an obvious matter to one having ordinary skill in the art]. Refer to recent decision by the Supreme Court (*KSR International Co. v. Teleflex, Inc.*, 550 U.S. ---, 82 USPQ2d 1385 (2007)).

### **THIRD POINT OF ARGUMENT**

28. In response to Applicant's remark that Supplement 10 does not teach or suggest prefetching based on information obtained from a DICOM modality worklist as Supplement 10 teaches a DICOM modality worklist that is queryable, but is not queryable for the purpose of prefetching; the Examiner submits that the reference to Supplement 10 has been provided only

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for the purposes of scheduling events to be performed by a DICOM worklist and the reference to Cooke teaches prefetching data likely to be accessed in view of a scheduled event. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system that prefetches data likely to be accessed in view of a scheduled event as taught by Cooke and use a DICOM modality worklist to schedule events, as taught by Supplement 10. [Refer to Rejections and Arguments above].

29. All arguments by the applicant are believed to be covered in the body of the office action; thus, this action constitutes a complete response to the issues raised in the remarks dated June 18, 2007.

#### **CLOSING COMMENTS**

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

**Examiner's Note**

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30. Examiner has cited particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant, in preparing the responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

**Conclusion**

**a. STATUS OF CLAIMS IN THE APPLICATION**

31. The following is a summary of the treatment and status of all claims in the application as recommended by M.P.E.P. 707.07(i):

**a(1) CLAIMS REJECTED IN THE APPLICATION**

32. Per the instant office action, claims 1-11, 13-15, 17-23, 25 and 33 have received an action on the merits and are subject of a final rejection.

**b. DIRECTION OF FUTURE CORRESPONDENCES**

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yaima Campos whose telephone number is (571) 272-1232. The examiner can normally be reached on Monday to Friday 8:30 AM to 5:00 PM.

**IMPORTANT NOTE**

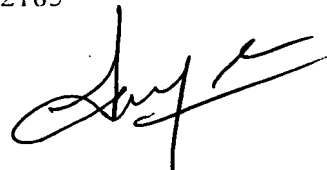
34. If attempts to reach the above noted Examiner by telephone are unsuccessful, the Examiner's supervisor, Mr. Sanjiv Shah, can be reached at the following telephone number: Area Code (571) 272-4098.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

August 24, 2007



Yaima Campos  
Examiner  
Art Unit 2185



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